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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/783,000	02/14/2001	Heinz Lindenmeier	LINDENMEIER ET AL-18	1924

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COLLARD & ROE, P.C.
1077 Northern Boulevard
Roslyn, NY 11576

EXAMINER

JACKSON, BLANE J

ART UNIT	PAPER NUMBER
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2685

DATE MAILED: 10/24/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/783,000

Applicant(s)

LINDENMEIER ET AL.

Examiner

Blane J Jackson

Art Unit

2685

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-25 is/are pending in the application.
- 4a) Of the above claim(s) ____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) ____ is/are allowed.
- 6) ☒ Claim(s) 1, 2 and 21-25 is/are rejected.
- 7) ☒ Claim(s) 3-20 is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on ____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on ____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. ____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) 2.
- 4) ☐ Interview Summary (PTO-413) Paper No(s). ____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____

DETAILED ACTION

Claim Rejections - 35 USC § 112

1. Claim 2 is rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the enablement requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to enable one skilled in the art to which it pertains, or with which it is most nearly connected, to make and/or use the invention. The discussion for figure 3 in the Specification is unclear, specifically the "in-line reactances ... connected to a ground terminal 3, for example on one side" and "reversing of the impedance elements".

Claim Rejections - 35 USC § 103

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 1 and 21-25 are rejected under 35 U.S.C. 103(a) as being unpatentable over Heiter (U.S. 4,232,399) and Miyoshi et al. (U.S. Patent 6,622,013) with a view to Gurak (U.S. Patent 3,593,147).

As to claim 1, ^{1, 21-23}Gurak teaches an antenna diversity system for receiving frequency-modulated (FM) radio signals in an FM receiver with the phase-controlled summation of antenna signals (figure 2, column 2, lines 5-44), for motor vehicles having

a multi-antenna system (29), (30) with antenna switches (31), (32) coupled to antennas for producing at least two antenna output signals including:

A receiver having a first input (figure 2, (signal source 6) and a second input (10) coupled respectively to the at least two antenna signals (figure 2),

A summation circuit for adding up the two received antenna signals in a phase coincident manner to produce at its output an added up signal to be supplied to the frequency demodulator of the FM receiver (combiner (14), column 3, lines 50-75),

Gurak teaches a method of phase shifting both signals where the received antenna output signal at the second input has the same phase as the antenna signal in the first receiver input

A phase controller (phase comparators (25), (27) adjusting a VFO driving the first stage mixers of both signals) having its input coupled to the output signal of the summation circuit (figure 2, combiner (14)).

Gurak does not teach a phase shifter having its input coupled to the second input of the receiver and a phase controller having its output coupled to the phase shifter, the controller having a low pass filter to limit its speed of shifting of the phase shifter.

Heiter teaches a space diversity receiving system with a phase shift network (75) having its input coupled to the second input (73) of a receiver where the received antenna output signal at the second input has the same phase at the output of the phase shifter as the antenna signal in the first receiver input (figure 5, column 5, lines 9-21). Heiter also discloses a phase controller (76, 77, 78, 79) having its output coupled to the phase shifter ((75), two shifters to for greater range), the controller having circuits

to limit its speed of shifting of the phase shifter (figure 5, column 5, line 52 to column 6, line 67). It would have been obvious to one of ordinary skill in the art at the time of the invention to modify the phase control method of Gurak with the method of Heiter so as to implement a phase shifter with extended range under continuous speed adjustment control.

Gurak and Heiter do not teach an interference detector signaling a controllable logic switch for selecting different switching positions of the antenna switches based on a detected reception disturbance.

Miyoshi teaches a system that selects antenna sets for use in diversity reception with an interference detector having its input coupled to the output of the summation circuit for rapidly detecting a reception disturbance in the added up signal caused by a swing in the frequency of the receive FM signals so as to produce an interference detection signal at the output of the detector (figure 10, column 16, lines 15-48, error detection section (802), column 17, lines 43 to column 18, line 13, detecting whether or not a measured value meets a predetermined reference value). Miyoshi further teaches a controllable logic switch having its output coupled to the antenna switches of an antenna system and its input coupled to the interference detector (figure 10, antenna set selection section (801) between antenna switch (120) and error detection section (802)) so that when a received signal that is different in terms of diversity is supplied to at least one of the two inputs of the receiver from each of the different switching positions of the antenna switches detector will actuate the logic switch and thus switch antenna switches to another switching position during the presence of a reception

disturbance so that the output signal fed to the demodulator is free of reception interference (column 17, lines 43-53). It would have been obvious to one of ordinary skill in the art at the time of the invention to enhance the diversity system of Gurak modified with the antenna selection methods of Miyoshi to achieve better diversity performance in a short time with the calculation circuits using the simple antenna selection method even when the number of antennas is increased.

As to claim 25, Gurak teaches an antenna diversity system where the means for shifting the phase of at least one antenna output signal (figure 2, (Fa) or (Fb)) comprises a phase control means to adjust the phase of means for shifting the phase for a maximum signal to interference ratio in the added up signal (column 4, lines 5-26, phase control to ensure in-phase combining in combiner (14) - which achieves maximum signal).

Allowable Subject Matter

3. Claims 3-20 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

As to claim 3, the prior art does not teach a signal evaluation processor containing a timing member for determining the time intervals between successive interference indications and a logic circuit where the time intervals are compared in the logic circuit with the build up time of the phase controller so that in the event the build up time falls

short of a suitably preset build up time one or more times, said build up time being selected shorter or not substantially longer than the build up time, a reversing command signal is generated by the evaluation processor for reversing from the phase mode to the scanning mode.

Conclusion

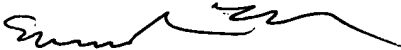
4. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Buck (WO 89/11184) teaches a diversity reception process and antenna system for mobile reception. Muto (U.S. Patent 5,490,180) teaches a diversity receiver with normalizer and combiner prior to decoder. Xue (U.S. Patent 6,049,705) teaches a mobile terminal with three cross-polarized antennas selected individually or combined using selection diversity, switching selection diversity, fixed combining diversity, and maximal ratio combining and interference rejection combining. Gottfried et al. (U.S. Patent 5,603,107) teaches an FM radio wave receiver includes a diversity antenna system responsive to signal strength and noise levels.

5. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Blane J Jackson whose telephone number is (703) 305-5291. The examiner can normally be reached on Monday through Friday, 8:00 AM-5:00 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Edward Urban can be reached on (703) 305-4385. The fax phone number for the organization where this application or proceeding is assigned is (703) 872-9306.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 306-0377.

BJJ


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